Self-Assessment Report for Fiscal Year 2003

Environment, Safety, & Health

Ernest Orlando Lawrence Berkeley National Laboratory

Performance Characterization

Berkeley Lab assessed three key areas of Environment, Safety, & Health (ES&H) performance for the FY-2003 Appendix F Performance Objectives, Criteria, and Measures (POCMs). The first area evaluated best practices and the implementation of national standards for ES&H programs and systems; the second area measured ES&H processes to validate that Integrated Safety Management (ISM) is fully implemented and robust at all levels of Laboratory operations; and the third area reviewed performance results from four ES&H outcome measures. Altogether, it is the intent that FY-2003 POCMs confirm that the Laboratory effectively conducts work safely and in an environmentally responsible manner, and is striving to continuously improve its ES&H programs and systems.

Preamble

The Laboratory's goal is to accomplish its mission cost-effectively while striving for an injury-free workplace, minimizing waste streams and adverse impacts to the public and environment from its operations.

The following Performance Objective, Criteria, and Measures are linked to best practices and national standards for ES&H programs and systems. They include best practices in self-assessment and hazard analysis, certified/independently validated ES&H management systems, and process and outcome measures to validate Integrated Safety Management.

Unless otherwise specified in the Performance Measures, the performance period is October 1, 2002, through September 30, 2003.

Performance Objective #1

Do Work Safely: *The Laboratory uses best practices and certified/independently validated management systems to integrate ES&H into Laboratory work processes at all levels so those missions are accomplished while protecting the worker, the public, and the environment.* **(Weight = 100%)**

Summary

For this year's performance period, Berkeley Lab conducted its work safely while protecting workers, the public, and the environment. Integrated Safety Management continues to mature at the Laboratory, resulting in outstanding performance in defining work, identifying and controlling hazards, performing work within authorization, and assessing and improving its ES&H programs and systems. The four outcome measures further validated the effectiveness of ISM at the Laboratory. Most outcome measures were at the Outstanding level. In addition to the process and outcome measures for ISM, Berkeley Lab embarked on an improvement initiative to institute best practices and national standards for its ES&H programs. All milestones related to best practices and certified or independently validated ES&H management systems were completed as scheduled, resulting in an Outstanding rating. Performance ratings for each of the POCMs are summarized in the table on the following page.

POCM No.	Measure	Rating
1.1 Best Practices and Certified/Independently Validated ES&H Management Systems		
1.1.a(i)	Best Practices in Self-Assessment	Outstanding
1.1.a(ii)	Best Practices in Hazard Analysis	Outstanding
1.1.a(iii)	Certified / Independently Validated ES&H Management Systems	Outstanding
1.2 ISM System Process Measures		
1.2.a	Work Planning	Outstanding
1.2.b	Identify and Control Hazards	Outstanding
1.2.c	Perform Work	Outstanding
1.2.d	Feedback and Improvement	Outstanding
1.3 Outcome Measures		
1.3.a	Routine Exposures from Routine Activities	Outstanding
1.3.b	Prevention of Unplanned Radiation Exposures	Outstanding
1.3.c	Control of Radioactive Material	Outstanding
1.3.d	Accident Prevention	Good

Criterion 1.1

Best Practices and Certified/Independently Validated ES&H Management Systems: *The Laboratory will assess, develop, and implement best practices and certified/independently validated ES&H management systems based upon industry best practices and international/national standards.* **(Weight = 40%)**

Performance Measure 1.1.a

Best Practices and Certified/Independently Validated ES&H Management Systems: *The Laboratory will complete scheduled milestones to assess, develop, and implement best practices in (i) self-assessment, (ii) hazard analysis, and (iii) certified/independently validated ES&H management systems.* **(Weight = 40%)**

Agreed-upon milestones are the following:

(i) Best Practices in Self-Assessment (SA)

Milestones	Target Completion
1. Research Department of Energy (DOE) and industry benchmarks and standards for SA programs.	11/01/02
2. Select SA best-practice criteria (i.e., benchmark/standard) most appropriate for Berkeley Lab operations and activities.	11/15/02
3. Define best-practice review process.	01/15/03
4. Identify review panel and schedule review.	3/1/03
5. Complete third-party review of SA program.	6/30/03
6. Identify gap analysis of Berkeley Lab SA program against best practices.	7/30/03
7. Develop best-practice improvements identified by gap analysis.	9/30/03
8. Complete any FY-2003 milestones for implementing best-practice improvements.	9/30/03
9. Complete implementation of best-practice improvements.	TBD (FY 2004)

(ii) Best Practices in Hazard Analysis

Milestones	Target Completion
1. Develop review criteria for the evaluation of best practices for hazard analysis of Berkeley Lab's research and development facilities. Consideration must be given to practices described in DOE Supplemental Directive 5481.1B; LBNL/PUB-3000, Chapter 6; and certified ES&H systems with hazard-analysis elements.	11/15/02
2. Select independent review panel and schedule review.	12/15/02
3. Complete independent review.	3/1/03
4. Identify gap analysis of Berkeley Lab programs against best practices.	4/1/03

Milestones	Target Completion
5. Develop best-practice improvements to address programmatic deficiencies identified in gap analysis. Improvements include actions for determining applicability of DOE Supplemental Directive 5481.1B for Laboratory operations; amending LBNL/PUB-3000, Chapter 6, to institutionalize best-practice improvements; and assuring process consistency with hazard-analysis elements in proposed certified ES&H systems (see Part III below). Prepare schedule for implementation of best-practice improvements.	5/1/03
6. Complete FY-2003 milestones for best-practice improvements.	9/30/03
7. Complete implementation of best-practice improvements.	TBD (FY 2004)

(iii) Certified/Independently Validated ES&H Management Systems

Milestones	Target Completion
1. Research international/national standards for certification/ validation of ES&H management systems.	12/15/02
2. Select international/national standards for certification/ validation of ES&H management systems	1/15/03
3. Develop Berkeley Lab ES&H management systems plan.	6/30/03
4. Conduct assessment by organizations that have experience in ES&H management systems.	TBD (FY 2004)
5. Develop and implement FY-2004 milestones/improvements to address recommendations identified by assessment.	TBD (FY 2004)
6. Develop and implement FY-2005 milestones/improvements to address recommendations identified by assessment	TBD (FY 2005)
7. Implement certification/validation process.	TBD (FY 2005)

Assumptions

1. It is expected that accomplishing this measure will require a multiyear effort.
2. This objective is consistent with the ES&H five-year (FY 2003–FY 2007) strategic plan.
3. A certified/independently validated ES&H management system will be based on:
   - Principles described by the DOE Office of Science (Card memo) of line management accountability, national standards, oversight, contractor accountability, vision, and incentives
   - International/national standards
   - Self-assessment against the standards
4. Berkeley Lab will notify DOE of complications and delays that result in missing milestone target dates. Contract-performance rating will not be lowered when

milestones are completed after the proposed target dates, with no adverse impacts to the certification/validation process.

5. To complete the best-practice studies and certification process, new milestones will be developed and agreed upon each year by Department of Energy/ Berkeley Site Office (DOE/BSO) and Berkeley Lab for FY 2004 and FY 2005.
6. The selection of the independent review panels for the best-practice studies in self-assessment and hazard analysis must be jointly agreed upon by DOE/BSO and Berkeley Lab.
7. The selection of the certification/validation standards and systems must be jointly agreed upon by DOE/BSO and Berkeley Lab. Certified/independently validated ES&H management systems under consideration include ISO 14001 Environmental Management System elements, Voluntary Protection Program (VPP), OSHAS 18001 Occupational Safety and Health Management System elements, Accreditation Association for Ambulatory Health Care (AAAHC), Emergency Management, and DOE Laboratory Accreditation Program (DOELAP). The DOE/BSO Director and Berkeley Lab Deputy Director of Operations will resolve conflicts in the selection process. Contract-performance ratings will not be lowered in the event milestone target dates are missed due to the conflict-resolution process.
8. The certification/validation process will be based upon nationally recognized standards and performed by nationally recognized experts.
9. Validation of the best-practice improvements must be conducted by DOE/BSO.

Gradient:

Unsatisfactory:	Little or no effort has been demonstrated towards the achievement of the performance measure.
Marginal:	Some effort is demonstrated; however, results fall short of the expectations for the “Good” gradient.
Good:	Weighted completion of 11 of 17 milestones scheduled for FY 2003.
Excellent:	Weighted completion of 13 of 17 milestones scheduled for FY 2003.
Outstanding:	Weighted completion of 15 of 17 milestones scheduled for FY 2003.

Performance Measure Results

Seventeen milestones were scheduled for completion during the performance period, all of which Berkeley Lab successfully completed on time. The Laboratory performed the following actions to accomplish the milestones:

Performance Measure 1.1.a(i). Best Practices in Self-Assessment

Milestones	Target Completion	Actual Completion
1. Research DOE and industry benchmarks and standards for SA programs.	11/01/02	10/14/02
2. Select SA best-practice criteria (i.e., benchmark/standard) most appropriate for Laboratory operations and activities.	11/15/02	10/14/02
Action: The DOE Office of Environment, Safety, and Health (DOE/EH) Self-Assessment Accreditation Working Group convened at Berkeley Lab on September 18–19 to finalize the accreditation objectives and criteria and the accreditation-review process. The working-group meeting in September was the culmination of activities that had taken place during the past several months to identify best practices for self-assessment programs. The consensus of the working group was to utilize the self-assessment principles developed by the Institute of Nuclear Power Operations (INPO) as the basis for accreditation. The working group made minor changes to the INPO self-assessment principles to better correlate with DOE and Laboratory operations and activities. A final version of the self-assessment-accreditation objectives and criteria was approved in mid-October.		
3. Define best-practice review process.	1/15/03	1/15/03
Action: As part of the same process for developing accreditation objectives and criteria, the DOE/EH Self-Assessment Accreditation Working Group also developed the review process for accreditation in October 2002. The Laboratory submitted a self-evaluation report of its Self-Assessment Program in January 2003 (copy provided to Berkeley Site Office [BSO] point of contact). DOE/EH members of the Working Group will review and comment on the self-evaluation report. The accreditation process will then include (1) selecting an independent review panel to conduct the on-site review of Berkeley Lab's self-assessment program, (2) scheduling and conducting the on-site review in the spring, (3) addressing findings identified in the review report, and (4) appearing before a DOE/HQ-based accreditation board to present Berkeley Lab's self-assessment program and status of corrective actions generated by the on-site review.		
4. Identify a review panel and schedule review.	3/1/03	3/1/03
Action: A self-assessment review panel was selected with the following members: • Chip Lagdon, DOE/EH-21, team leader • George Detsis, DOE/EH-24 • Jack Anderson, Environment, Health, and Safety (EH&S) Director, Princeton Plasma Physics Laboratory (PPPL) • Larry Coulson, EH&S Director (retired), Fermi National Accelerator Laboratory (FNAL)		

Milestones	Target Completion	Actual Completion
5. Complete third-party review of SA program.	6/30/03	6/15/03
Action: The Review Panel conducted its evaluation of Berkeley Lab's Self-Assessment Program during the week of April 28–May 2. The Panel assessed the Laboratory's program against the twelve INPO-based accreditation objectives and criteria developed by the Accreditation Working Group. The on-site agenda included program presentations, interviews with senior and line managers and staff, and walkthroughs/orientations of facilities and work processes. At the closeout conference on May 2, the Panel provided preliminary results of noteworthy practices and areas for improving the Laboratory's Self-Assessment Program. The final panel report was submitted to BSO and Berkeley Lab in mid-June. Based on the overall results of their review, the panel recommended that Berkeley Lab move forward to the next step of the accreditation process, namely to present its SA Program to the DOE Accreditation Board at DOE Headquarters (DOE/HQ).		
6. Identify gap analysis of Berkeley Lab SA program in comparison to best practices.	7/30/03	7/29/03
7. Develop best-practice improvements identified by the gap analysis.	9/30/03	7/29/03
8. Complete any FY-2003 milestones for implementing best-practice improvements.	9/30/03	9/30/03
Action: A combined gap analysis and corrective-action implementation plan was completed on July 29, 2003. The report identifies actions the Laboratory will complete to improve its Self-Assessment Program and to progress to the final stage of the accreditation process. Improvements already completed in FY 2003 include (1) mandatory EH&S training for supervisors and managers (EHS 20), which was approved by the Safety Review Committee and senior Laboratory management, and (2) self-assessment training (EHS 799), which is required for involved division personnel. Fourteen of the 16 division safety coordinators have completed EHS 799. All other improvement actions are scheduled for completion in FY 2004.		

Performance Measure 1.1.a(ii). Best Practices in Hazard Analysis

Milestones	Target Completion	Actual Completion
1. Develop review criteria for the evaluation of best practices for hazard analysis of Berkeley Lab's research and development facilities. Consideration will be given to practices described in DOE Supplemental Directives 5481.1B and LBNL/PUB-3000, Chapter 6; and to certified ES&H systems with hazard-analysis elements.	11/15/02	11/06/02
Action: A Berkeley Lab working group was formed to develop the review criteria for best practices in hazard analysis. The group reviewed hazard-analysis processes described in DOE Orders and Directives, Occupational Safety and Health Administration (OSHA) regulations, and LBNL/PUB-3000. The working group determined that the most appropriate criteria to use for the best-practice review should be based on the objectives in DOE Directive 5481.1B, *Safety Analysis and Review System*, and on the Safe Work Authorization requirements in LBNL/PUB-3000, Chapter 6. The review criteria were finalized at the beginning of November 2002.		
2. Select independent review panel and schedule review.	12/15/02	12/10/02
Action: The independent review panel was selected. The panel included the following members: • Jeremiah Lynch, Consultant (government and private-sector business base) • Earl Carnes, DOE Office of Nuclear and Facility Safety • Paul Norton, Lam Research, Senior Manager, Global EH&S • Ron Owen, IBM Advisory Engineer		
3. Complete independent review.	3/1/03	1/30/03
Action: Berkeley Lab provided the review panel members with Laboratory hazard-analysis program information and documents in December 2002. The panel conducted its on-site review on January 16–17, 2003. The agenda, review criteria, and panel members' curriculum vitae were provided to BSO for its files. The review panel's final report provided recommendations for improving the Laboratory's hazard-analysis process. The panel also acknowledged that the Laboratory's hazard-analysis system, as described in LBNL/PUB-3000, Chapter 6, "does correspond with the goals of OAK SD 5481.1B and goes beyond the expectations of the hazards assessment practices that are considered best practices in industry." The final panel report was forwarded to BSO.		
4. Identify gap analysis of Berkeley Lab programs against best practices.	4/1/03	4/1/03
Action: The Environment, Health, and Safety (EH&S) Division Safety Engineering Group conducted a gap analysis of the panel report to determine opportunities to improve the Laboratory's hazard-analysis process. Recommended areas for improvements identified in the panel report include revision of LBNL/PUB-3000, Chapter 6; competency training; prevention measures in Laboratory Corrective Action Tracking System (LCATS); and chemical inventory. The EH&S gap analysis report was forwarded to BSO.		

Milestones	Target Completion	Actual Completion
5. Develop best-practice improvements to address programmatic deficiencies identified in gap analysis.	5/1/03	5/1/03
Action: Based on the gap analysis, a best-practice improvement plan was developed to improve the hazard-analysis process at Berkeley Lab. Specific actions, responsible individuals, and target completion dates are identified in the improvement plan. Key actions include the review and revision of trigger levels and descriptors in LBNL/PUB-3000, Chapter 6, by EH&S group leaders; revision of on-the-job training (OJT) and competency-training documentation; modification of the LCATS corrective-action process; additional utilization of the new Chemical Management System; and a work-authorization-process-review assessment of the impact of synergistic and aggregate hazards. The best-practice improvement plan was forwarded to BSO.		
6. Complete FY-2003 milestones for best-practice improvements.	9/30/03	9/30/03
Action: The following improvements for hazard analysis were completed during FY 2003: 1. Mandatory EH&S training for supervisors and managers was approved by the Safety Review Committee and Berkeley Lab senior management. 2. Chapter 6 of LBNL/PUB-3000 has been revised to provide a better definition of "significant changes" to trigger additional formal authorization review. 3. Integrated Functional Appraisals (IFAs) are now mandatory on a triennial basis. 4. Office of Assessment and Assurance (OAA) will be automatically notified of all Hazard Level 1 or 2 deficiencies from the LCATS database. OAA will work with the appropriate parties to determine root causes and preventative measures. 5. The new Berkeley Lab Chemical Management System database is now on-line and can now screen building/laboratory chemical inventories against thresholds set forth in 29 CFR 1910.119.		

Performance Measure 1.1.a(iii). Certified, Independently Validated ES&H Management Systems

Milestones	Target Completion	Actual Completion
1. Research international/national standards for certification/validation of ES&H management systems.	12/15/02	12/9/02
2. Select international/national standards for certification/validation of ES&H management systems.	1/15/03	1/15/03

Action: Each program manager or group leader from the EH&S Division researched their programs for international/national standards or certification processes. As a result of their research, the following ES&H management systems have been identified for certification or independent validation:

- Applicable elements of International Standards Organization (ISO) 4001, Environmental Management System
- Voluntary Protection Program (VPP), Occupational Health and Safety Program
- DOE Laboratory Accreditation Program (DOELAP)
- Environmental Laboratory Accreditation Program (ELAP), State of California
- Instrument Calibration Program (selection of one of the following candidate accreditations per the instrument calibration action plan):
  - ISO 17025
  - National Voluntary Laboratory Accreditation Program (NVLAP), National Institute of Standards and Technology (NIST)
  - American Association for Laboratory Accreditation (AALA)
  - Conference of Radiation Control Program Directors (CRCPD)
  - Accredited Instrument Calibration Laboratory, Health Physics Society (HPS)
- Emergency Management Accreditation Program, Federal Emergency Management Agency (FEMA), National Emergency Management Association (NEMA), International Association of Emergency Managers (IAEM) certification
- Accreditation Association for Ambulatory Health Care (AAAHC), Occupational Medicine

3. Develop Laboratory ES&H management systems plan.	6/30/03	6/30/03

Action: Action plans for achieving certification or validation of candidate certified systems have been completed. Each plan identifies the key actions planned by the responsible manager to obtain certification or validation of their ES&H management system over the next several years. Laboratory managers with candidate-certified/validated systems have met with their DOE/BSO counterparts to discuss the proposed activities in their action plans. All plans were submitted to BSO.

Objective #1
Criterion 1.2

ISM System Process Measures: *The Laboratory uses the five core functions and seven principles of Integrated Safety Management (ISM) in its management and work processes.* **(Weight = 30%)**

Assumptions (for all process measures)

1. Supplemental information on the quality and effectiveness of Berkeley Lab's ISM program can be provided through the BSO/Berkeley Lab Operational Awareness (OA) Program. To support the gathering of information, the Laboratory reports on significant changes in ES&H systems and processes at the quarterly OA meetings. Examples of significant changes include modifications of any ISM plans; changes to ES&H policies and requirements in the Regulations and Procedures Manual (RPM), LBNL/PUB-3000, Operating and Assurance Plan (OAP), and Work Smart Standard (WSS) set; and alterations in EH&S Division staffing patterns, allocation of resources, and/or organizational structure.
2. The Laboratory's self-assessment program is a major component for evaluating ISM at the Laboratory. BSO personnel are invited to participate as observers in self-assessment activities, including, but not limited to, validation of division self-assessments and integrated functional appraisals. DOE observers can provide feedback on the Laboratory's self-assessment activities. Such feedback can be used as supplemental information to address the quality and effectiveness of the Laboratory's Self-Assessment Program.
3. ISM plans refer to the Laboratory's Institutional Safety Plan, each division's ISM plan, and the Operations departmental (Facilities and Directorate) ISM plans.
4. Subcontractor operations/personnel are included in ISM implementation if the subcontractor is performing part of the Laboratory's operations and reporting its hours to the Laboratory. To this end, the Laboratory's contracting process evaluates and considers the safety record of prospective subcontractors; once selected, subcontractor statistics are gathered and performance is tracked separately. Subcontractors are excluded from Berkeley Lab's reports to Occupational Safety and Health Administration (OSHA) if they are "servicing" the Laboratory (e.g., copy machine vendors or other transient workers).
5. Peer reviews, existing procedures, implementing memoranda, Laboratory tracking system data, and other work-process products serve as demonstrable evidence in contribution to satisfaction of measure gradients. Successes and difficulties associated with these processes are included in the report. It is not the intention of this measure to foster the generation of supportive or demonstrable documents other than those needed or necessary to perform the work.
6. The evaluation of the process measure is the DOE validation of the effectiveness of ISM implementation.
7. Environmental management is a key component of the Laboratory's ISM plan. Environmental performance as described in FY-2002 Appendix F, Measure 1.2.h, Waste Reduction and Recycling; Measure 1.2.g, Tracking Environmental Incidents; Measure 1.3.a, Environmental Restoration Schedule Variance; and Measure 1.4.a, Environmental Restoration Cost Variance, must be evaluated in Process Measure 1.2.c, Perform Work, and reported at least quarterly in either Operational Awareness meetings, DOE/LBNL program meetings, ES&H quarterly reports, or Site Environmental Reports. Overall rating of environmental performance is the average gradient performance for all four measures.

Objective #1
Criterion 1.2
Process Measure 1.2.a

Work Planning: *Line management provides evidence that the ISM division plans and work planning adequately identify and prioritize resources to address programmatic needs and work safety. Line managers regularly participate in ES&H activities.* **(Weight = 7.5%)**

Gradient:

Unsatisfactory: Little or no effort has been demonstrated toward achievement of the performance measure.

Marginal: Some effort is demonstrated; however, results fall short of the expectations for the "Good" gradient.

Good: More than 70% of division ISM plans have been reviewed and updated within past year. ISM plans are evaluated for quality of content to address the division scope of work and for consistency with institutional ISM requirements. Work planning demonstrates that work and safety priorities are adequately balanced. Line managers regularly participate in ES&H activities. The institutional ISM plan has been reviewed and updated for changes in sitewide scope of work.

Excellent: More than 80% of division ISM plans have been reviewed and updated within past year. ISM plans are evaluated for quality of content to address the division scope of work and for consistency with institutional ISM requirements. Work planning demonstrates that work and safety priorities are adequately balanced. Line managers regularly participate in ES&H activities. The institutional ISM plan has been reviewed and updated for changes in sitewide scope of work.

Outstanding: More than 90% of division ISM plans have been reviewed and updated within past year. ISM plans are evaluated for quality of content to address the division scope of work and for consistency with institutional ISM requirements. Work planning demonstrates that work and safety priorities are adequately balanced. Line managers regularly participate in ES&H activities. The institutional ISM plan has been reviewed and updated for changes in sitewide scope of work.

Performance Measure Result

All divisions and other applicable Laboratory organizations reviewed and updated, as appropriate, their ISM plans within the past year. The institutional ISM Plan was last reviewed and updated in December 2002. Review of the updated ISM plans demonstrated that divisions' scope of work, allocation of resources, and balance of work and safety priorities were addressed adequately. Under ISM functions to define the scope of work, identify and control hazards, and provide feedback and improvements, divisions and applicable organizations demonstrated that their line managers regularly participated in ES&H activities. These performance results were validated by OAA during the annual division self-assessment review process in August 2003. Division ratings of performance by OAA for this measure are as follows:

Performance criteria: Line management provides evidence that the ISM division plans and work planning adequately identify and prioritize resources to address programmatic needs and work safety. Line managers regularly participate in ES&H activities.

Division	Performanc e Rating	Division	Performance Rating
Accelerator and Fusion Research	**M**	Advanced Light Source	**M**
Chemical Sciences	**M**	Computing Sciences	**M**
Directorate/Operations	**M**	Earth Sciences	**M**
Engineering	**M**	Environmental Energy Technologies	**M**
Environment, Health & Safety	**M**	Facilities	**M**
Life Sciences	**M**	Materials Sciences	**M**
Nuclear Sciences	**M**	Physics	**M**
Physical Biosciences	**M**	Genomics	**M**
			Percent Performance (48/48) = 100%

Rating Legend:

M	Fully met criteria (3 points)
P	Partially met criteria (2 points)
U	Marginally or unsatisfactorily met criteria (1 point)

Objective #1
Criterion 1.2
Process Measure 1.2.b

Identify and Control Hazards: *Divisions have a process to appropriately identify, analyze, and categorize the hazards and have identified the appropriate requirements to mitigate the risks associated with the division's work.*
(Weight = 7.5%)

Gradient:

Unsatisfactory: Little or no effort has been demonstrated toward achievement of the performance measure.

Marginal: Some effort is demonstrated; however, results fall short of the expectations for the "Good" gradient.

Good: Hazards have been appropriately identified for more than 70% of division self-authorized work and more than 90% of work requiring formal authorizations (i.e., RWAs, RWPs, AHDs, SSAs).

Excellent: Hazards have been appropriately identified for more than 80% of division self-authorized work and more than 95% of work requiring formal authorizations.

Outstanding: Hazards have been appropriately identified for more than 90% of the work requiring division self-authorization and 100% of work requiring formal authorizations.

Performance Measure Result

Hazards are appropriately identified for work requiring division self-authorization and formal authorizations (i.e., Radiological Work Authorizations [RWAs], Radiological Work Permits [RWPs], activity hazard documents [AHDs], sealed source authorizations [SSAs]). For formal authorizations, the hazards and authorized work are tracked through the Radiation Authorization Database and Reports (RADAR) for radiological materials and through the AHD database for other hazardous materials or equipment, both managed by the EH&S Division. All authorized work is reviewed and updated at least annually. Significant midyear changes in scope of authorized work require an additional review and approval at the time of the change. Division self-authorized work is managed by divisions in a number of different ways. Some divisions require the completion of a safety-review questionnaire; others required an assurance memo from principal investigators and managers. Most divisions also identify hazards and track self-authorized work through the Hazards, Equipment, Authorizations, and Review (HEAR) database (which is also managed by EH&S). The systems used by each division to identify hazards and to ensure that controls are in place were validated by OAA during the annual division self-assessment review process in August 2003. Division ratings of performance by OAA for this measure are as follows:

Performance criteria: Divisions have a process to appropriately identify, analyze, and categorize the hazards and have identified the appropriate requirements to mitigate the risks associated with a division's work.

Division	Performanc e Rating	Division	Performance Rating
Accelerator and Fusion Research	**M**	Advanced Light Source	**M**
Chemical Sciences	**M**	Computing Sciences	**M**
Directorate/Operations	**M**	Earth Sciences	**M**
Engineering	**M**	Environmental Energy Technologies	**M**
Environment, Health & Safety	**M**	Facilities	**M**
Life Sciences	**M**	Materials Sciences	**M**
Nuclear Sciences	**M**	Physics	**M**
Physical Biosciences	**M**	Genomics	**M**
			Percent Performance (48/48) = 100%

Rating Legend:

M	Fully met criteria (3 points)
P	Partially met criteria (2 points)
U	Marginally or unsatisfactorily met criteria (1 point)

Objective #1
Criterion 1.2
Process
Measure 1.2.c

Perform Work: *Work is performed within the conditions and requirements for ES&H specified by Laboratory policies and procedures.* **(Weight = 7.5%)**

Gradient:

Unsatisfactory: Little or no effort has been demonstrated toward achievement of the performance measure.

Marginal: Some effort is demonstrated; however, results fall short of the expectations for the "Good" gradient.

Good: More than 80% of authorized work (i.e., SAA, AHD, RWA, RWP, X-Ray, SSA, SAD) is in compliance. (Note: RWA compliance is measured against major and significant deficiencies.) More than 80% of required ES&H training is completed. More than 90% of serious and imminent danger situations, as defined by LCATS Hazard Level 1 and 2, are identified, analyzed for root causes, and mitigated within the specified timeframe. Environmental performance is achieved at an overall "Good" gradient level, as specified in the FY 2002 Appendix F performance measures 1.2.h, 1.2.g, 1.3.a, and 1.4.a (see Assumption #7).

Excellent: More than 85% of authorized work (i.e., SAA, AHD, RWA, RWP, X-Ray, SSA, SAD) is in compliance. (Note: RWA compliance is measured against major and significant deficiencies.) More than 85% of required ES&H training is completed. More than 95% of serious and imminent danger situations, as defined by LCATS Hazard Level 1 and 2, are identified, analyzed for root causes, and mitigated within the specified timeframe. Environmental performance is achieved at an overall "Excellent" gradient level, as specified in the FY 2002 Appendix F performance measures 1.2.h, 1.2.g, 1.3.a, and 1.4.a (see Assumption #7).

Outstanding: More than 90% of authorized work (i.e., SAA, AHD, RWA, RWP, X-Ray, SSA, SAD) is in compliance. (Note: RWA compliance is measured against major and significant deficiencies.) More than 90% of required training is completed. 100% of serious and imminent danger situations, as defined by LCATS Hazard Level 1 and 2, are identified, analyzed for root causes, and mitigated within the specified timeframe. Environmental performance is achieved at an overall "Outstanding" gradient level, as specified in the FY 2002 Appendix F performance measures 1.2.h, 1.2.g, 1.3.a, and 1.4.a (see Assumption #7).

Performance Measure Result

More than 90% compliance was achieved for authorized work. Compliance for managing hazardous waste in Satellite Accumulation Areas (SAAs) was at 97%, as indicated by more than 1,213 SAA inspections performed during the performance period. Only one Nonconformance and Corrective Action Report (NCAR) has been issued this year, for the inaccurate weight of a waste shipment. For radiological work and materials, the Laboratory is at more than 98% compliance, as shown by 2,009 surveys of controlled areas. Only seven major or serious deficiencies were discovered for radiological work at four LBNL divisions. Four of the seven deficiencies involved inadequate surveying and monitoring of the work area; two deficiencies involved work activities not authorized by the Radiological Work Authorizations; and the last deficiency involved contamination discovered outside a posted radioactive material work area. (Note: below thresholds to be an ORPS reportable occurrence.) The deficiencies have all been corrected.

On a sitewide basis, 92% of required ES&H training has been completed by Laboratory employees and participating guests.

Berkeley Lab experienced two serious violations (imminent-danger situations) during the performance period. An EH&S safety professional discovered evidence of a violation of an interlock on a door to a high-voltage cage in Building 58: A plastic cable tie was on the interlock switch, ready to defeat and bypass the switch at any time. Following the discovery, a management/subject-matter-expert committee investigated the incident and instituted additional controls to preclude such violations in the future. The root cause identified for this incident was a personnel error in which procedures were not used or used incorrectly. In the second incident, EH&S discovered a crane-bridge walkway in Building 51B where personnel were not using fall-protection equipment or devices to prevent a potential fall of at least 50 feet. Although the building is slated for demolition during this calendar year, a fall-protection scheme has been devised for those few instances where the crane must be serviced this year. The root cause for this incident appears to be a management problem where policy was not adequately defined, disseminated, and enforced.

To demonstrate its continued commitment to environmental protection, Berkeley Lab used last year's four environmental Appendix F performance measures to evaluate progress for the current performance year (see Assumption #7). Performance results are as follows:

Performance Measure 1.2.g, Tracking Environmental Incidents. Berkeley Lab experienced no environmental violations or releases during the performance period. Performance is at the Outstanding gradient.

Performance Measure 1.2.h, Waste Reduction and Recycling. Berkeley Lab achieved the following annual percent reduction from the 1993 baseline level (data current as of 6/30/03). The total score amounts to an Excellent rating.

Waste Stream	% Reduction	Score
Hazardous	76.5%	3
Low-Level	71.0%	2
Mixed	82.7%	3
Sanitary	71.9%	3
	Total Score	11

Performance Measure 1.3.a, Environmental Restoration Schedule Variance. This measure tracks the Laboratory's Environmental Restoration Program (ERP) performance in executing projects in accordance with an approved overall schedule. Three components, the schedule variance and completion of regulatory and nonregulatory milestones, are tracked to evaluate overall performance. As of the Third Quarter, ERP is about 6% behind schedule but has completed all required milestones. According to the Office of Environmental Management guidance, the FY-2003 program was prepared in accordance with the budget proposed in the Performance Management Plan. Actual FY-2003 funding is $307,000 less than the requested budget. Additionally, final funding levels were not clear throughout the Third Quarter; therefore, certain activities were delayed in the Third Quarter to ensure that approved funding targets would not be exceeded; however, because of the cost-savings initiatives, the current schedule variance is expected to be closed by the end of FY 2003. The Laboratory anticipates an Outstanding rating by year-end.

Milestones completed to date:

- Three Quarterly Progress Reports dated November 2002, February 2003, and May 2003 were submitted to the Department of Toxic Substances Control (DTSC).
- Ecological and Human Health Risk Assessments were submitted to DTSC in December 2002 and January 2003.
- Several work plans for pilot tests were submitted to DOE and DTSC.

Performance Measure 1.4.a, Environmental Restoration Cost Variance. This measure addresses the Laboratory's ERP performance against the FY-2003 baseline. The current FY-2003 baseline funding for the ERP is $3,491,000. As of the end of Third Quarter, the ERP cost variance is equal to approximately 7%. The Laboratory anticipates an Outstanding rating by year-end.

- Actual cost of work performed (ACWP) through the Third Quarter is $2,484,000.
- Budgeted cost of work performed (BCWP) through the Third Quarter is $2,665,000.
- Cost variance through the Third Quarter is 7%.

Overall environmental performance is at the Outstanding level (based on the average gradient performance for all four measures).

Objective #1
Criterion 1.2
Process Measure 1.2.d

Feedback and Improvement: *Opportunities for institutional improvements are identified from the Laboratory's annual ES&H Self-Assessment Report. Milestones for implementing improvements are met.* **(Weight = 7.5%)**

Gradient:

Unsatisfactory: Little or no effort has been demonstrated toward achievement of the performance measure.

Marginal: Some effort is demonstrated; however, results fall short of the expectations for the "Good" gradient.

Good: Opportunities for institutional improvements are identified in the Laboratory's annual ES&H Self-Assessment Report. A plan of action with milestones for each improvement target has been developed.

Excellent: More than 80% of the milestones in the plan of action have been met.

Outstanding: More than 90% of the milestones in the plan of action have been met.

Performance Measure Result

Three opportunities for institutional improvements were identified in last year's annual ES&H Self-Assessment Report. During the performance period, 10 of the 11 corrective-action milestones (90%) were completed or are on schedule.

Opportunity for Improvement	Corrective Action	Status
Legacy Waste. The management of legacy waste poses challenges to many people in the Laboratory community. Personnel participating in deconstruction and decommissioning activities must follow rigorous protocols to prevent employee exposures and environmental releases. Material handling by EH&S staff requires vigilance to ensure proper characterization and to prevent contamination of people and property. Researchers are responsible for accurate characterization of materials and waste, including proper material disposition when leaving the institution, to avoid future generation of legacy items. These diverse activities require institutional coordination.	1. Berkeley Lab will clarify roles and responsibilities for legacy waste.	Completed
	2. EH&S will provide appropriate and improved staffing for legacy waste projects.	Completed
	3. Current legacy-project goals:	
	• All legacy items in the Heavy Element Research Laboratory (HERL) will be characterized and disposition paths identified.	Completed
	• All Hazardous Waste Handling Facility (HWHF) legacy items will be characterized and disposition paths identified.	On schedule
	• Milestones for Calvin Lab legacy project completed this year. Other work is ongoing.	Completed
	• $900k appropriated to continue deconstruction and decontamination project at Building 51.	Completed

Opportunity for Improvement	Corrective Action	Status
Berkeley Lab/UCB Memorandum of Understanding (MOU). The current MOU regarding ES&H responsibilities between Berkeley Lab and the UC campus requires updating and is a deficiency in the institutional safety program. Managing the ES&H program of Laboratory employees who work on campus under ISM regulations is challenging, due to the lack of division authority over some campus space. Divisions must rely upon the UC ES&H programs for hazard control and staff training.	1. The new MOU will clarify responsibilities for Berkeley Lab and UC Berkeley. 2. Berkeley Lab has reviewed and approved the new MOU. UC Berkeley administrators are currently conducting their final review and approval.	Completed Open
Matrixed Staff. There is still no formal institutional policy on matrixed staff at the Laboratory. Although the Safety Review Committee has provided some leadership, divisions are still currently responsible for forming agreements regarding matrixed staff among themselves, with little formal guidance from the institution. Both the Laboratory-UC and interdivisional ES&H agreements must be updated and formalized.	1. An institutional policy for matrixed employees is drafted. 2. This policy has been reviewed and approved by the Safety Review Committee. 3. Formal adoption of the policy is placed into the Regulations and Procedures Manual and LBNL/PUB-3000.	Completed Completed Completed

Objective #1
Criterion 1.3

ISM System Outcome Measures: *System outcome measures are linked to the ISM process measures. System outcomes are used to validate and drive ISM excellence.* **(Weight = 30%)**

Objective #1
Criterion 1.3
Outcome Measure 1.3.a

Routine Exposures from Routine Activities: *Occupational radiation doses to individuals (excluding accidental exposures) from DOE operations are managed to ensure that applicable 10 CFR 835 limits are not exceeded.* **(Weight = 7.5%)**

Assumptions:

The performance period for this measure is from July 1, 2002 to June 30, 2003.

Any actual or anticipated significant changes in workloads or badged worker population (interpreted to be an increase or decrease of 10% or more) that would affect radiation doses are brought to the attention of UC and DOE, and appropriate adjustments are made.

Some variability is expected, which may not indicate a trend.

This Measure is directed toward current management and control of radioactive materials.

Outcome Measure reports demonstrate how results are used to drive improvement or maintain current best management practices.

Gradient:

Unsatisfactory: Little or no effort is demonstrated toward achievement of the Performance Measure.

Marginal: Some effort is demonstrated; however, results fall short of expectations for the “Good” gradient.

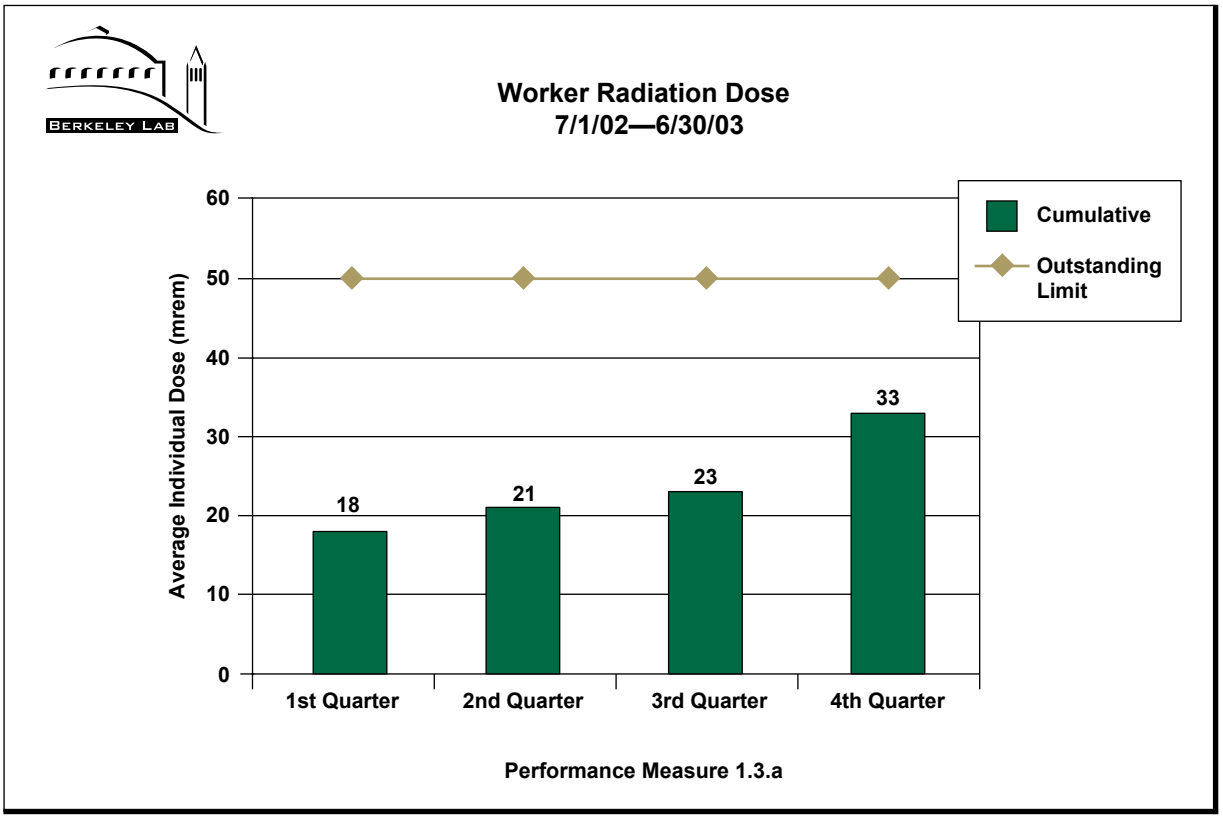
Good: No individual exposures in excess of 500 millirem without an increase in workload, unless specifically authorized in writing and approved by the Radiological Control Manager.

Excellent: Meets all qualifications for “Good,” plus the number of individual exposures exceeding 100 millirem is less than or equal to the control level of 10, without an increase in workload.

Outstanding: Meets all qualifications for “Excellent,” plus the average individual positive dose is less than the control level of 50 millirem, without an increase in workload.

Performance Measure Result

During the performance period from July 1, 2002, through June 30, 2003, one individual received a radiation exposure exceeding 100 mrem, a level of exposure that is below the control level of ten individuals with an exposure of more than 100 mrem; researchers at the Biomedical Isotope Facility at Building 56 anticipated the amount of exposure for that particular individual. On a sitewide basis, the average individual positive dose is 33 mrem, which is below the control level of 50 mrem.



Objective #1
Criterion 1.3
Outcome Measure 1.3.b

Prevention of Unplanned Radiation Exposures: *ORPS reportable occurrences of unplanned radiation exposures and skin or personal clothing contamination are managed and minimized.* **(Weight = 7.5%)**

Assumptions:

For the purpose of this measure, unplanned radiation exposures are considered to be greater than 100 mrem.

The number of individuals contaminated is counted.

Some variability is expected, which may not indicate a trend.

Outcome Measure reports demonstrate how results are used to drive improvement or maintain current best-management practices.

Gradient:

Unsatisfactory: Little or no effort is demonstrated toward achievement of the Performance Measure.

Marginal: Some effort is demonstrated; however, results fall short of expectations for the “Good” gradient.

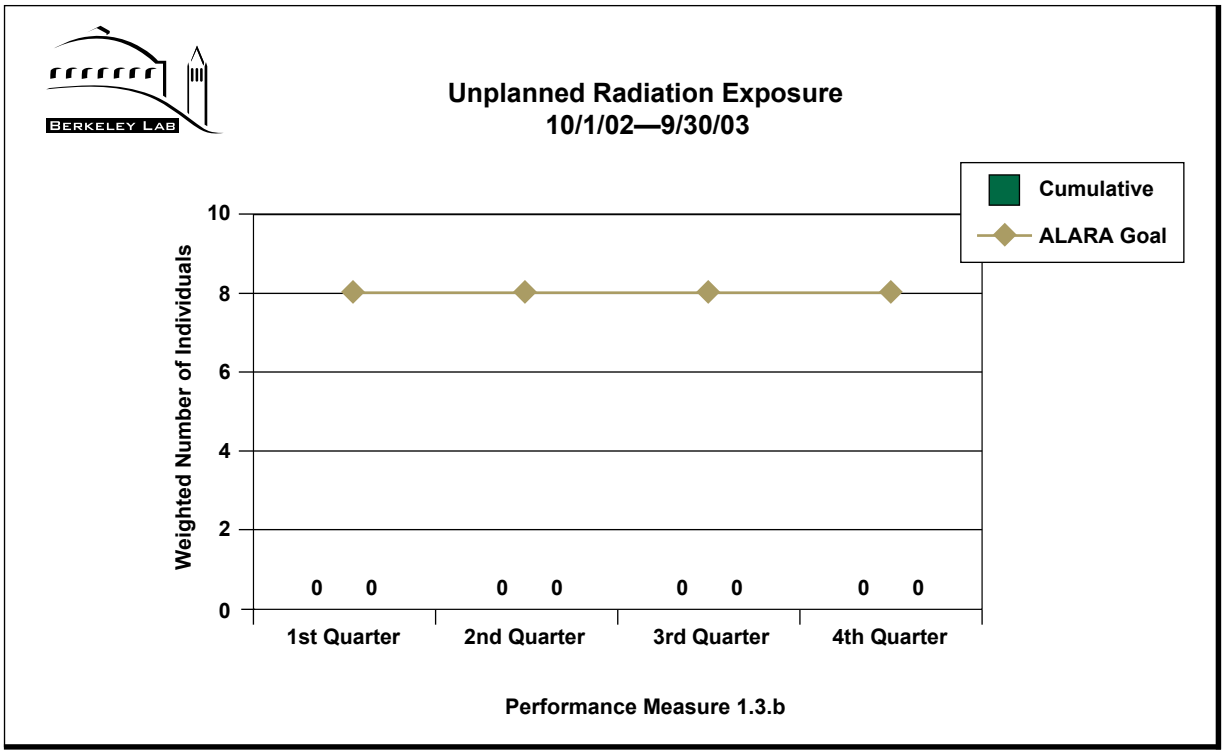
Good: The weighted number of contaminated individuals is more than 6.0 but less than or equal to 8.0.

Excellent: The weighted number of contaminated individuals is more than 4.0 but less than or equal to 6.0

Outstanding: The weighted number of contaminated individuals is less than or equal to 4.0.

Performance Measure Result

Berkeley Lab has no occurrences of unplanned radiation exposures nor significant skin or personal-clothing contamination for the current performance year to report in the occurrence reporting system (ORPS).



Objective #1
Criterion 1.3
Outcome Measure 1.3.c

Control of Radioactive Material: *Loss of control radioactive materials is managed and minimized.* **(Weight = 7.5%)**

Assumptions:

Off-normal occurrences have a weighting factor of 1, and unusual occurrences have a weighting factor of 1.5.

Some variability is expected, which may not indicate a trend.

This Measure is directed toward current management and control of radioactive materials.

Outcome Measure reports demonstrate how results are used to drive improvement or maintain current best-management practices.

Gradient:

Unsatisfactory: Little or no effort is demonstrated toward achievement of the Performance Measure.

Marginal: Some effort is demonstrated; however, results fall short of expectations for the “Good” gradient.

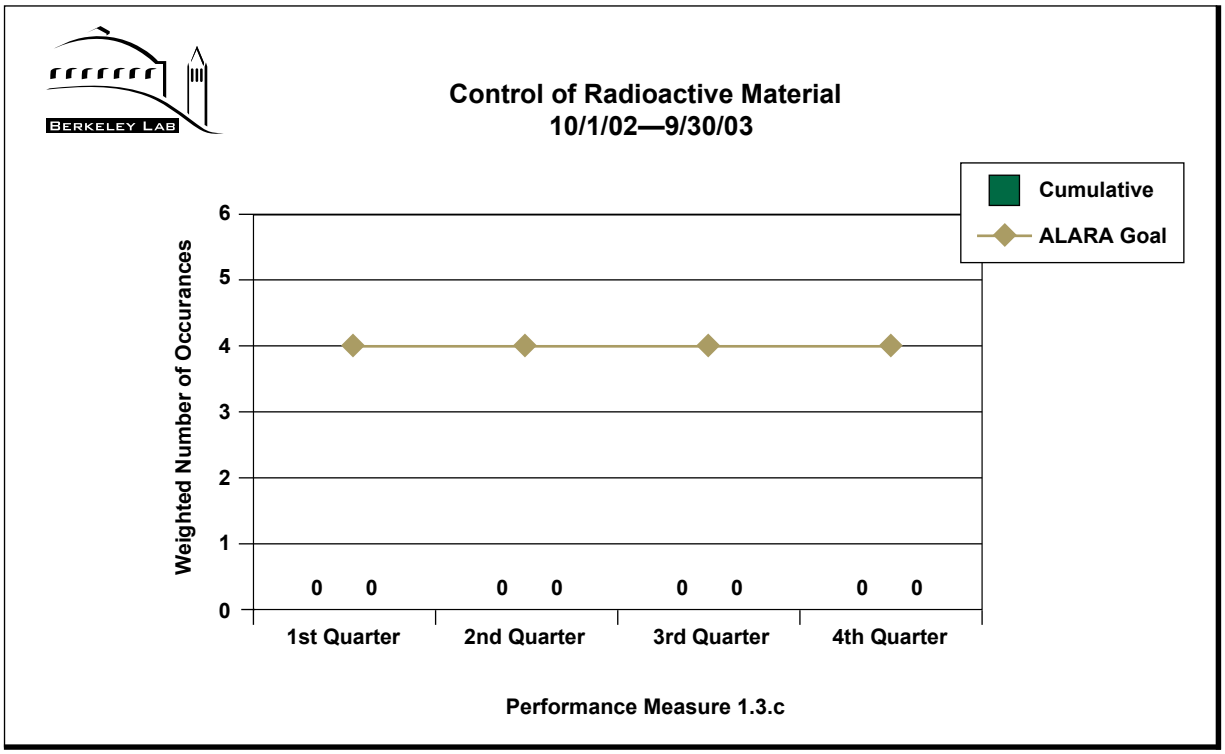
Good: The weighted number of occurrences is more than 4.0 but less than or equal to 6.0.

Excellent: The weighted number of occurrences more than 2.0 but less than 4.0.

Outstanding: The weighted number of occurrences is less than or equal to 2.0.

Performance Measure Result

Berkeley Lab has no ORPS-reportable occurrences of loss of control of radioactive material for the current performance year.



Objective #1
Criterion 1.3
Outcome Measure 1.3.d

Accident Prevention: *The baseline period for comparison is CY 1997 data. The Laboratory's severity and frequency [defined as Lost Workday Case Rate (LWC) and Total Recordable Case Rate (TRC), respectively] of accidents during the performance period are compared to the baseline period. The number of Bureau of Labor Statistics reportable occurrences of these accidents is tracked. A downward trend is expected as compared to the baseline year. The overall performance rating for this Measure factors in LWC and TRC rates and other accident prevention information identified below.* **(Weight = 7.5%)**

Assumptions:

Laboratory statistics are collected for the baseline for all Laboratory incidents, including subcontractors as reported to CAIRS.

For FY 2002 and future years, baseline assumptions are reviewed and, if appropriate, updated by mutual agreement between the local DOE office and the Laboratory.

Subcontractor operations/personnel are included for all subcontractors whose injury data are reported to CAIRS. Subcontractors are excluded if they are "servicing" the Laboratory (e.g., copy machine vendors or other transient workers).

The Laboratory's five-year goal for reduction of LWC and TWC is derived from the industry best-in-class Benchmarking Study completed in 1998 and in agreement with DOE.

Consideration is given to the Laboratory's rank for LWC and TRC within the best-in-class peer group.

Establishment and reporting of upper and lower control limits to determine the significance of accident rate variation (caused variation vs. random variation) are examined.

Consideration is given if any targeted/focused accident prevention program to a subpopulation within the Laboratory demonstrates effective intervention and/or improvement in the combined LWC and TRC score.

Consideration is given on demonstration of quantifiable return on investment (ROI) from implementation of accident prevention program initiatives.

Consideration is given to the rate of annual rate of reduction for LWC and TRC, using best in class as the benchmark and 1997 as the baseline year.

Overall rating of accident performance should be weighted toward higher recognition and credit for managing and reducing severity (LWC) of DOE recordable cases, due to LBNL's efforts to develop and implement multiple accident prevention initiatives early in the performance contract period. Therefore, the LWC has a weighting factor of 2 to 1 compared to the TRC.

If the DOE CAIRS reporting system changes during the performance year, data reported under the new system will be used after the effective date of the change. If the changes in the CAIRS system have an inequitable impact on this measure, the measure will be renegotiated at that time.

Gradient:

Progress toward reduction goals is evaluated using the following scoring system.

TRC between 3.00 and 2.25 = 1 point
TRC between 2.25 and 1.50 = 2 points
TRC below 1.50 = 3 points

LWC between 1.50 and 1.00 = 2 points
LWC between 1.00 and 0.50 = 4 points
LWC below 0.50 = 6 points

Unsatisfactory: Little or no effort is demonstrated toward achievement of the Performance Measure.

Marginal: Some effort is demonstrated; however, results fall short of expectations for the "Good" gradient.

Good: Performance for LWC and TRC is scored and then summed. The sum for this gradient is 2 to 4 points, with consideration for demonstrated achievements identified within the list of assumptions.

Excellent: Performance for LWC and TRC is scored is then summed. The sum for this gradient is 5 to 7 points, with consideration for demonstrated achievements identified within the list of assumptions.

Outstanding: Performance for LWC and TRC is scored and then summed. The sum for this gradient is 8 or more points, with consideration for demonstrated achievements identified within the list of assumptions.

Performance Measure Result

Berkeley Lab's injury and accident rates from October 1, 2002, to July 31, 2003, are at the Good gradient: The total recordable case (TRC) rate is 2.19, which represents an Excellent rating; the lost workday case (LWC) rate is 1.03, which falls within the Good gradient. The 4-point total score amounts to an overall rating of Good; the scoring is subject to change as EH&S receives additional data during the last two months of the performance period.